FCC CFR47 PART 15 SUBPART C

CLASS II PERMISSIVE CHANGE
TEST REPORT

FOR

802.11A/B MINI PCI TYPE 3B CARD

MODEL NUMBER: PA3234U-1MPC

FCC ID: CJ6UPA3234WL

REPORT NUMBER: 03U2197-1

ISSUE DATE: OCTOBER 16, 2003

Prepared for
TOSHIBA CORPORATION DIGITAL MEDIA NETWORK COMPANY
2-9 SUEHIRO-CHO, OME
TOKYO, 198-8710, JAPAN

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
MORGAN HILL, CA 95037, USA
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561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888

1. TEST RESULT CERTIFICATION

COMPANY NAME: TOSHIBA CORPORATION DIGITAL MEDIA NETWORK COMPANY
2-9 SUEHIRO-CHO, OME
TOKYO, 198-8710, JAPAN

EUT DESCRIPTION: 802.11A/B MINI PCI TYPE 3B CARD

MODEL: PA3234U-1MPC

DATE TESTED: SEPTEMBER 22 - OCTOBER 15, 2003

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Note: The 2.4 GHz band is applicable to this report; another band of operation (5.2 GHz) is documented in a separate report.

Approved & Released For CCS By:

MIKE HECKROTTE
CHIEF ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

VIEN TRAN
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The Class II Permissive Change is to add portable operation in the Toshiba Tablet PC, model PPM20U-AAAA2, including co-location with the Toshiba PA3232U-1BTM Bluetooth radio card.

The 802.11a/b WLAN transmitter has a maximum peak conducted output power as follows:

Frequency Band (MHz)	Mode	Output Power (mW)	Output Power (dBm)
2412 - 2462	802.11b	45.00	16.53

The WLAN radio utilizes two identical internal dipole antennas for diversity, with a maximum gain of 4.8 dBi.

The Bluetooth radio card has a modular approval, FCC ID: CJ6UPA3232BT. The Bluetooth radio utilizes a film antenna with a maximum gain of 1.22 dBi.

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3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/1992, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

4. FACILITIES AND ACCREDITATION

The open area test sites and conducted measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

LAB CODE:200065-0

No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

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5.3. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST AND MEASUREMENT EQUIPMENT LIST				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due Date
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	9/6/2004
Spectrum Analyzer	AGILENT	E4446A	US42070220	1/13/04
Pre-amplifier	MITEQ	NSP2600-SP	924341	4/25/04
Horn Antenna	EMCO	3115	6717	2/04/04
Power Meter	AGILENT	E4416A	0841291160	11/07/04
Power Sensor	Agilent	E9327A	US40440755	11/07/04
Antenna, Biconical	Eaton	94455-1	1214	3/06/04
Antenna, Log Periodic	EMCO	3146	9107-3163	3/06/04
Preamplifier	Miteq	NSP10023988	646456	4/26/04
Band Reject 2.4GHz	Micro-Tronics	BRM50702	003	N.C.R.

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Device Type	Manufacturer	Model	Serial Number	FCC ID
Laptop	**Toshiba**	**PPM20U-AAAA2**	**93010025**	**DoC**
AC adapter	**Toshiba**	**ADP-60RH A**	**0394336**	**DoC**

I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	**AC**	**1**	**US115**	**Unshielded**	**1.8m**	**No**
2	**DC**	**1**	**DC Jack**	**Unshielded**	**1.8m**	**No**

TEST SETUP

The EUT is installed in the host laptop.

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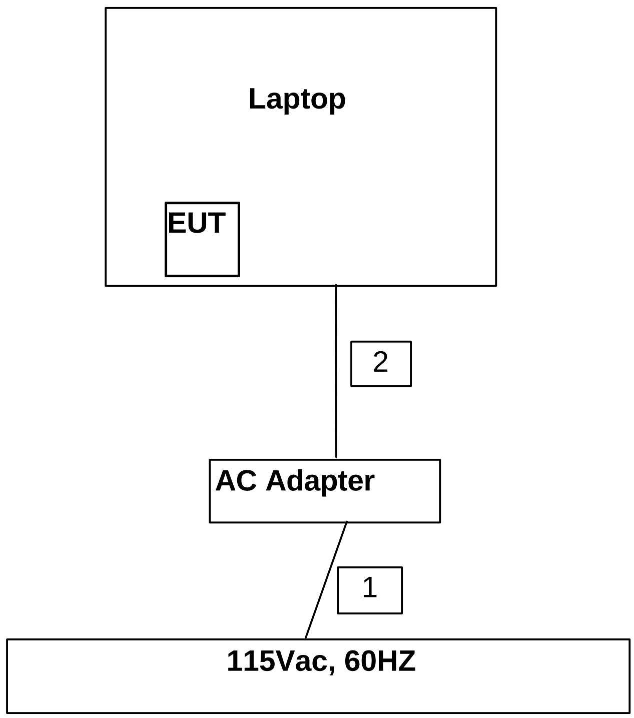
SETUP DIAGRAM



7. APPLICABLE RULES AND TEST RESULTS

7.1. RADIATED EMISSIONS

7.1.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

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§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

The configuration and orientation of the EUT was varied to determine the worst-case. The EUT was first configured as a typical laptop notebook PC resting on the turntable in a normal operating condition. It was then configured as a tablet PC, and evaluated in X, Y and Z orientations. The worst-case condition was observed with the EUT in the laptop configuration. Worst-case results are reported.

RESULTS

No non-compliance noted:

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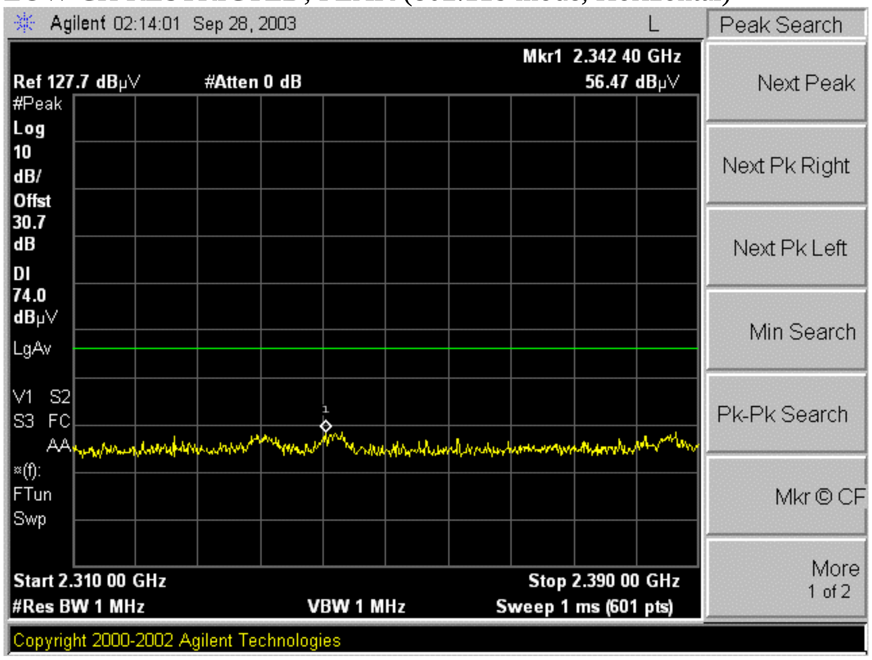
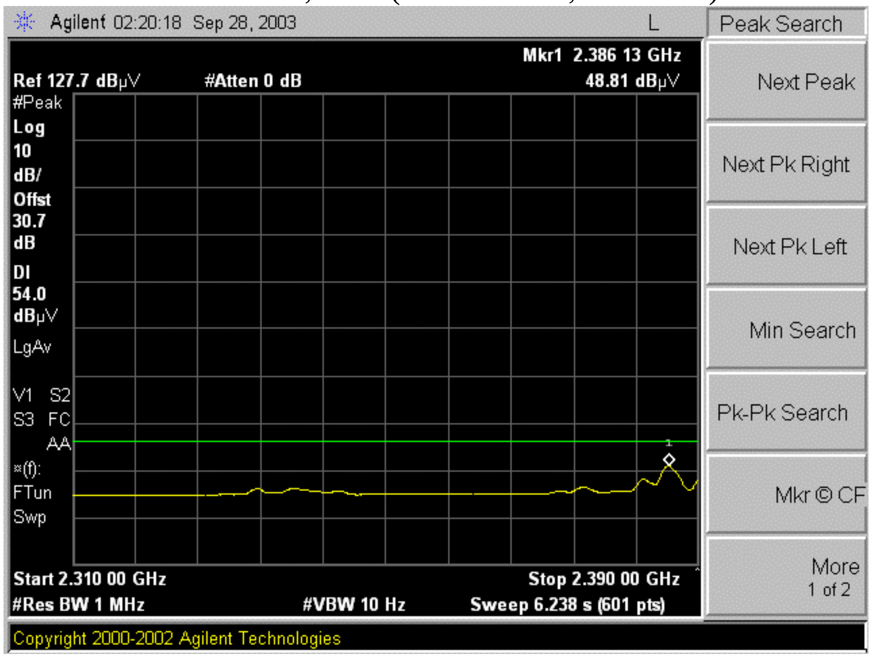
7.1.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Horizontal)

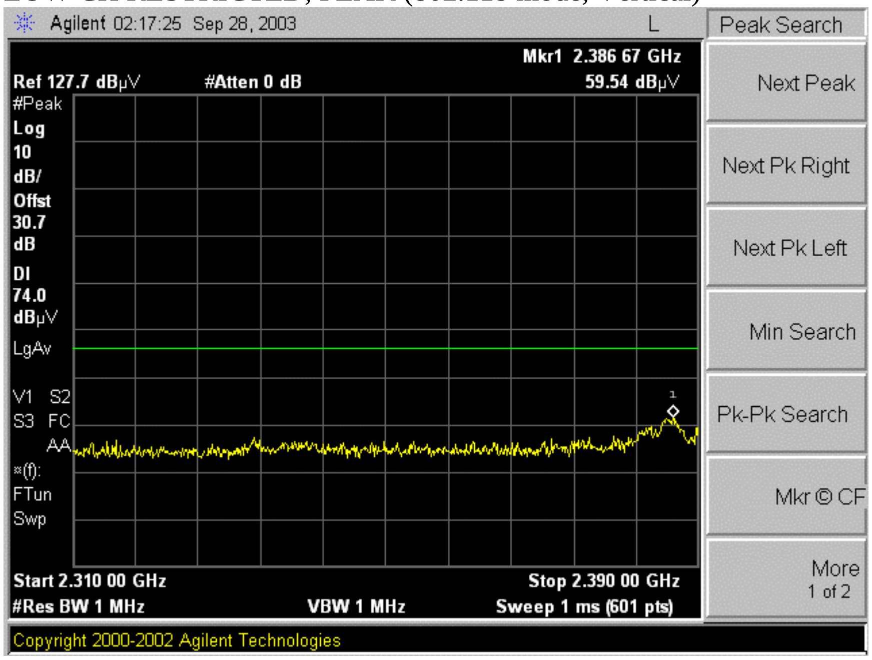


LOW CH RESTRICTED, AVG (802.11b mode, Horizontal)

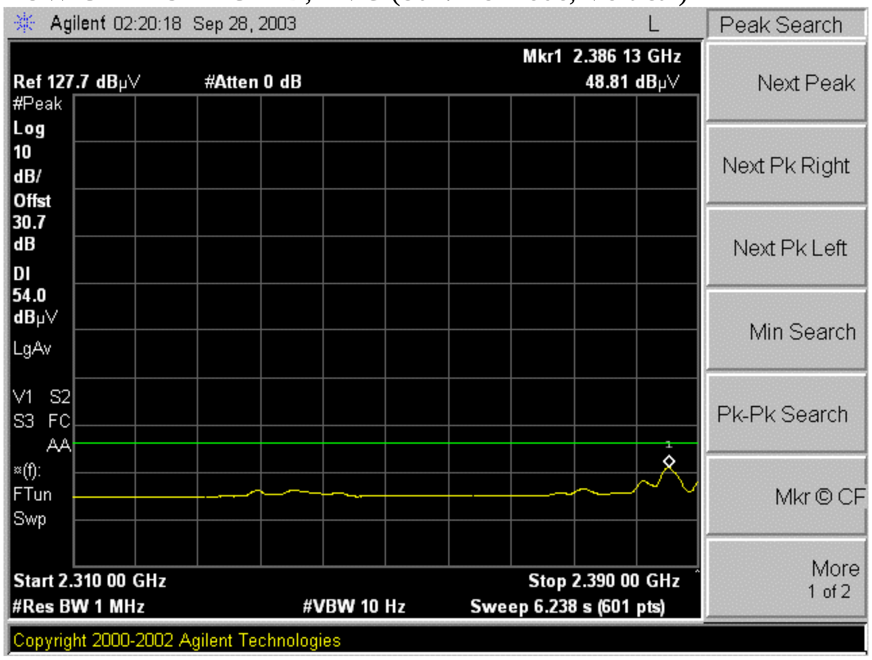


RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (802.11b mode, Vertical)

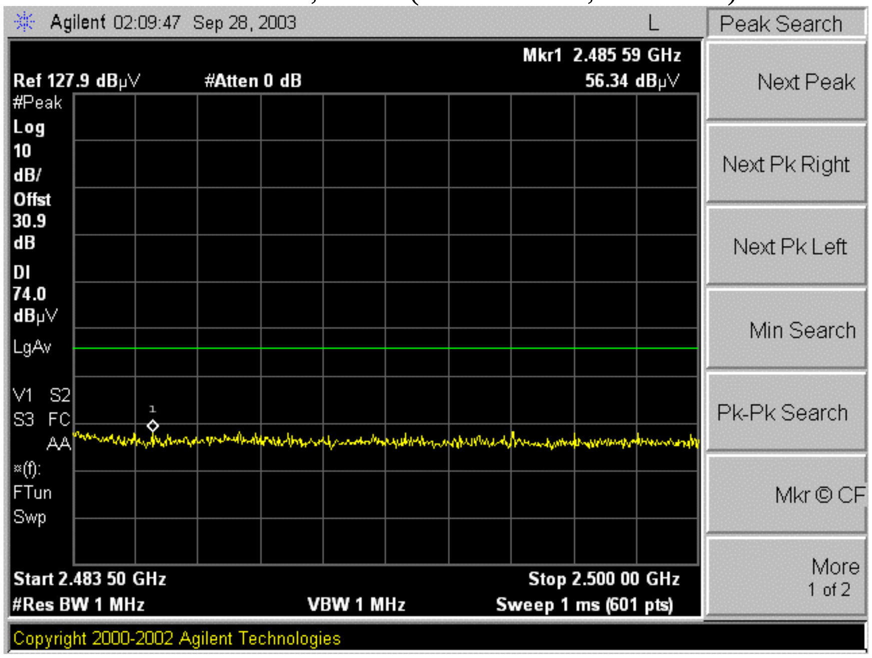


LOW CH RESTRICTED, AVG (802.11b mode, Vertical)

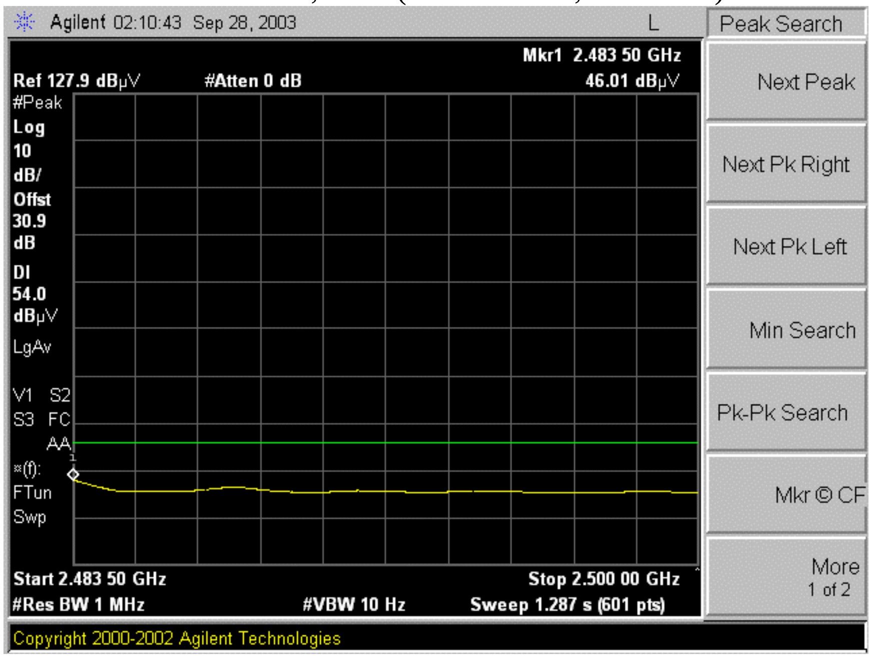


RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Horizontal)

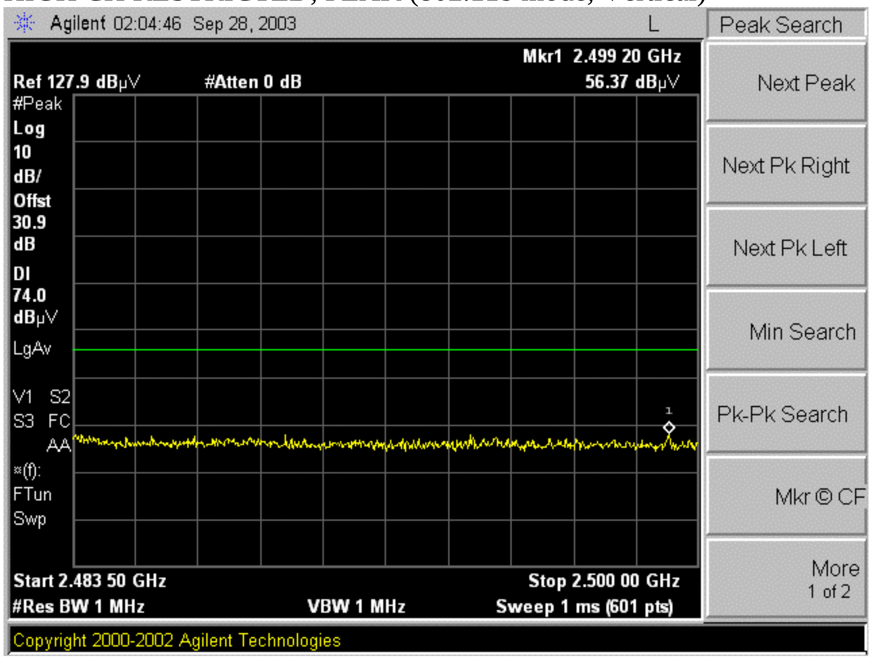


HIGH CH RESTRICTED, AVG (802.11b mode, Horizontal)

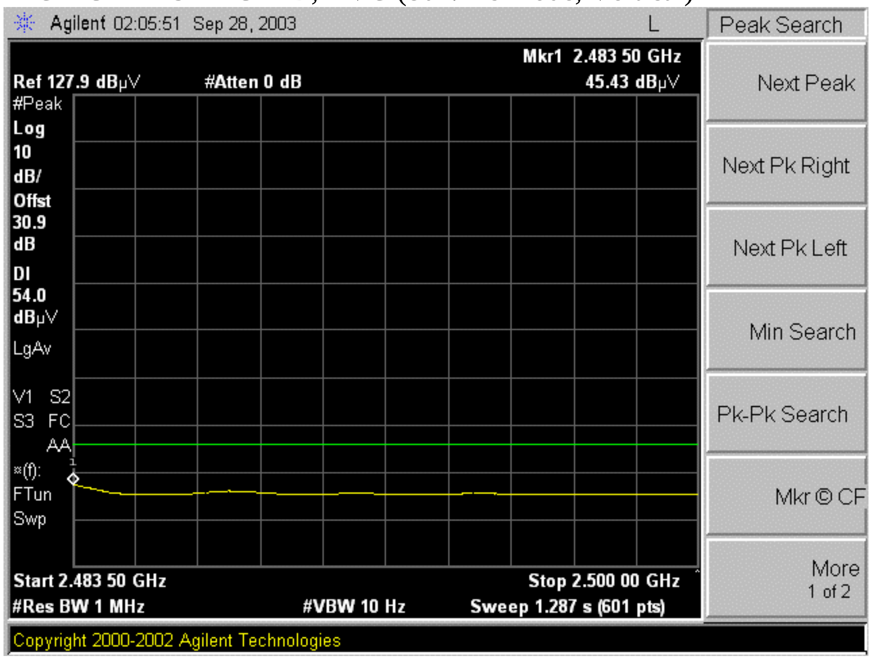


RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (802.11b mode, Vertical)



HIGH CH RESTRICTED, AVG (802.11b mode, Vertical)



HARMONICS AND SPURIOUS EMISSIONS (b MODE, ALL CHANNELS)

09/27/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: THANH NGUYEN
Project #: 03U2197
Company: TOSHIBA AMERICA INFORMATION SYSTEMS, INC.
EUT Descrip.: Intel 802.11 a/b MiniPCI Type 3B card
EUT M/N: PA3234U-1MPC (FCC ID: CJ6UPA3234WL)
Test Target: FCC 15.247
Mode Oper: b mode

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz
T73; S/N: 6717 @3m	T87 Miteq 924342	Agilent E4446A Analyzer	T87; ARA 18-26GHz; S/N:1049

Hi Frequency Cables
☐ (2 ft) ☑ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☑ (12 ft)

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
		Tx at 2.412GHz Harmonics and spuriuos Emissions.													
4.824	9.8	46.1	37.1	33.4	3.1	-44.7	0.0	1.0	38.9	29.9	74.0	54.0	-35.1	-24.1	Noise floor
12.060	9.8	47.3	35.1	39.2	5.6	-42.2	0.0	1.0	50.9	38.7	74.0	54.0	-23.1	-15.3	Noise floor
14.470	9.8	45.8	36.6	34.2	6.2	-44.8	0.0	1.0	42.4	33.2	74.0	54.0	-31.6	-20.8	Noise floor
No more Spurious emissions was detected above 16GHZ for both V&H Antenna.															
		Tx at 2.437GHz Harmonics and Spurious Emissions.													
4.874	9.8	46.3	36.5	33.4	3.2	-44.7	0.0	1.0	39.1	29.3	74.0	54.0	-34.9	-24.7	Noise floor
7.311	9.8	47.5	36.9	35.8	4.1	-44.5	0.0	1.0	43.9	33.3	74.0	54.0	-30.1	-20.7	Noise floor
12.185	9.8	43.5	35.1	39.2	5.6	-42.4	0.0	1.0	46.9	38.5	74.0	54.0	-27.1	-15.5	Noise floor
19.496	9.8	44.2	33.4	33.7	7.5	-45.0	0.0	1.0	41.3	30.5	74.0	54.0	-32.7	-23.5	Noise floor
No more Spurious emissions was detected above 20GHZ for both V&H Antenna.															
		Tx at 2.462GHz Harmonics and Spurious Emissions.													
4.924	9.8	47.5	36.5	33.5	3.2	-44.8	0.0	1.0	40.3	29.3	74.0	54.0	-33.7	-24.7	Noise Floor
7.386	9.8	47.7	36.8	36.0	4.1	-44.5	0.0	1.0	44.3	33.4	74.0	54.0	-29.7	-20.6	Noise Floor
12.310	9.8	45.7	35.3	39.2	5.7	-42.5	0.0	1.0	48.9	38.6	74.0	54.0	-25.1	-15.4	
No more Spurious emissions was detected above 12GHZ for both V&H Antenna.															

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

7.1.3. CO-LOCATED TRANSMITTER RADIATED EMISSIONS

SUPPLEMENTAL TEST PROCEDURE

The dominant transmitter is set to the worst-case channel. The spurious emissions performance of the dominant transmitter is investigated as the frequency of the non-dominant transmitter is varied. Worst-case results are reported.

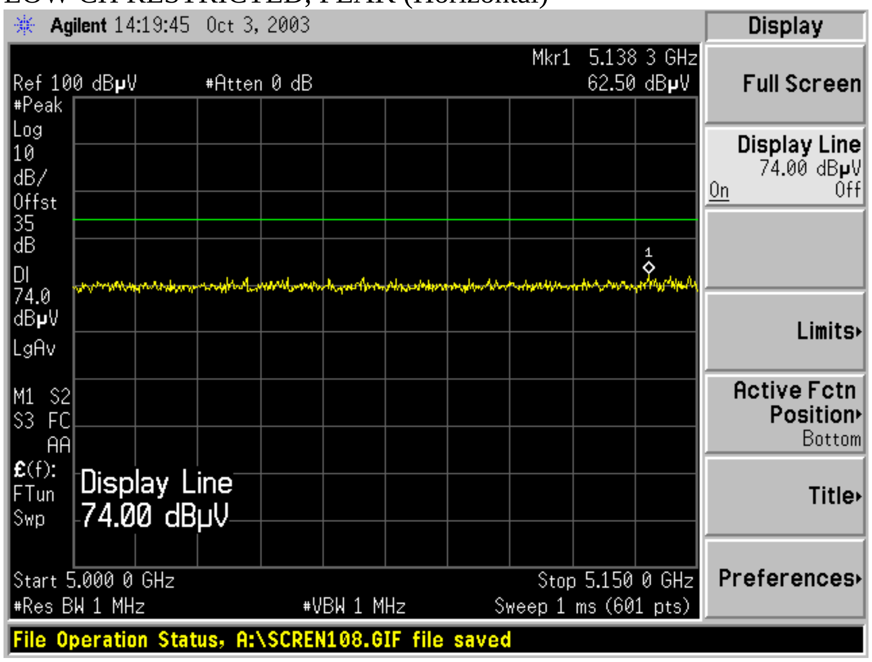
RESULTS

The 5.2 GHz transmitter is dominant.

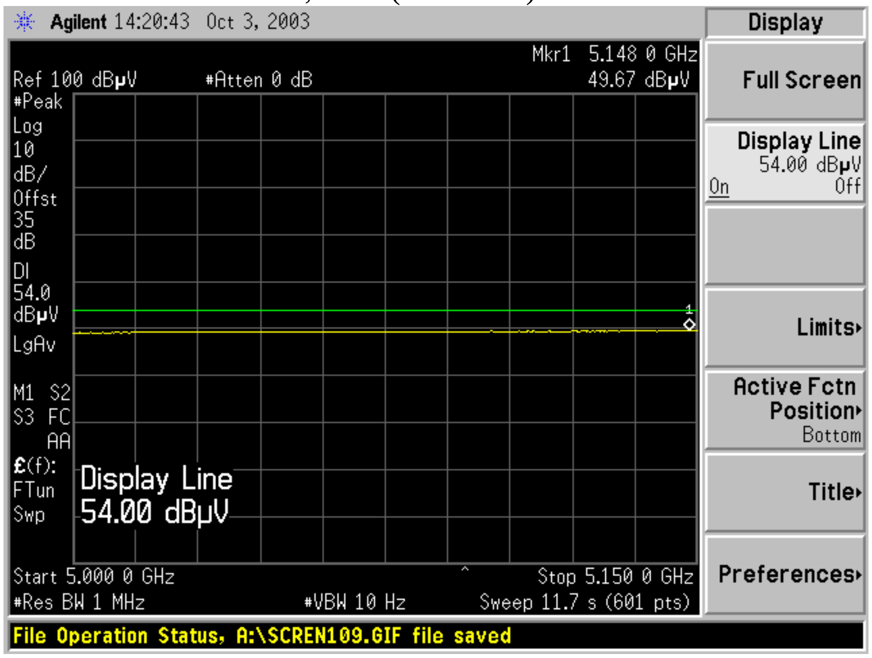
No non-compliance noted:

WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, PEAK (Horizontal)

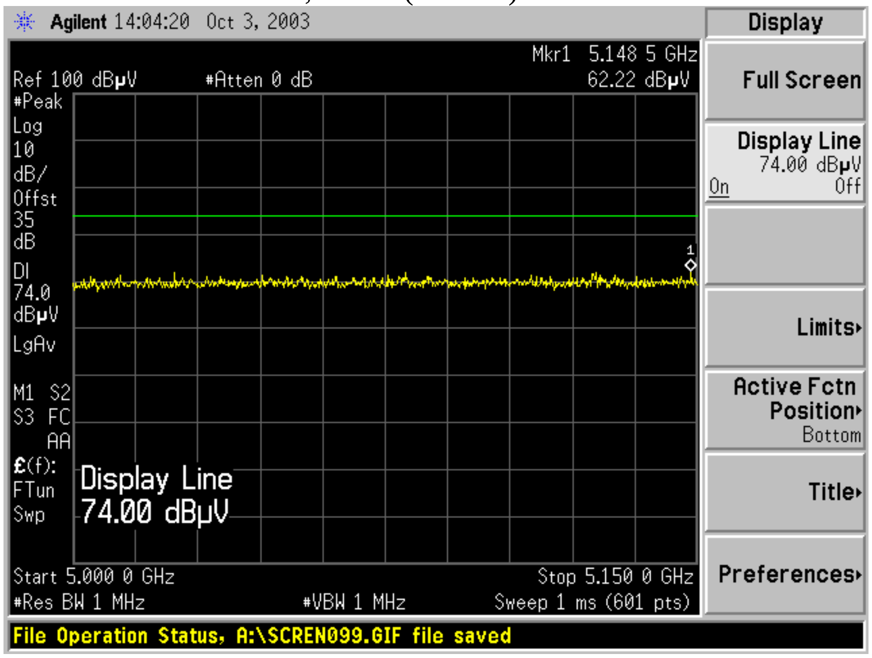


LOW CH RESTRICTED, AVG (Horizontal)

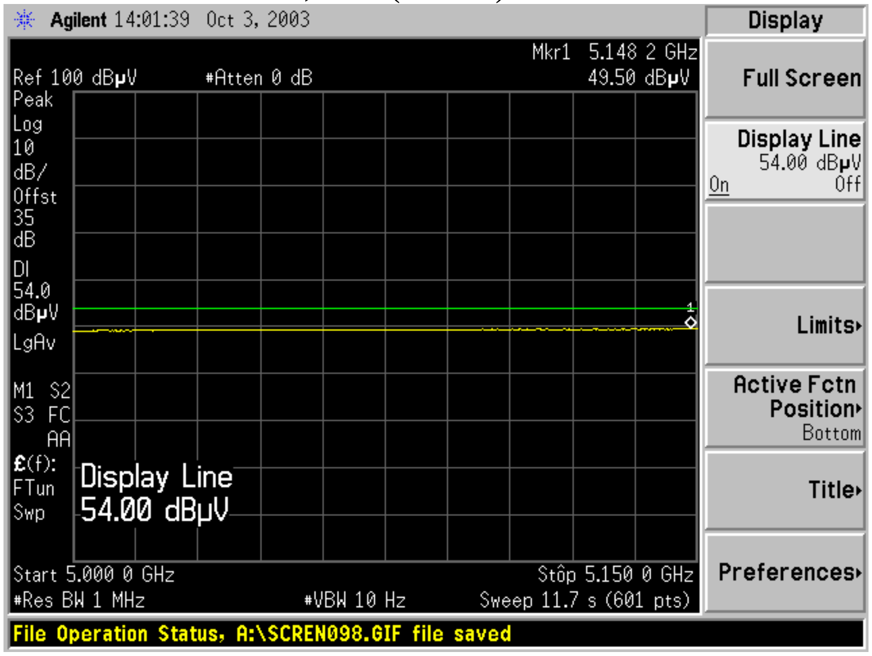


WORST-CASE RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, PEAK (Vertical)

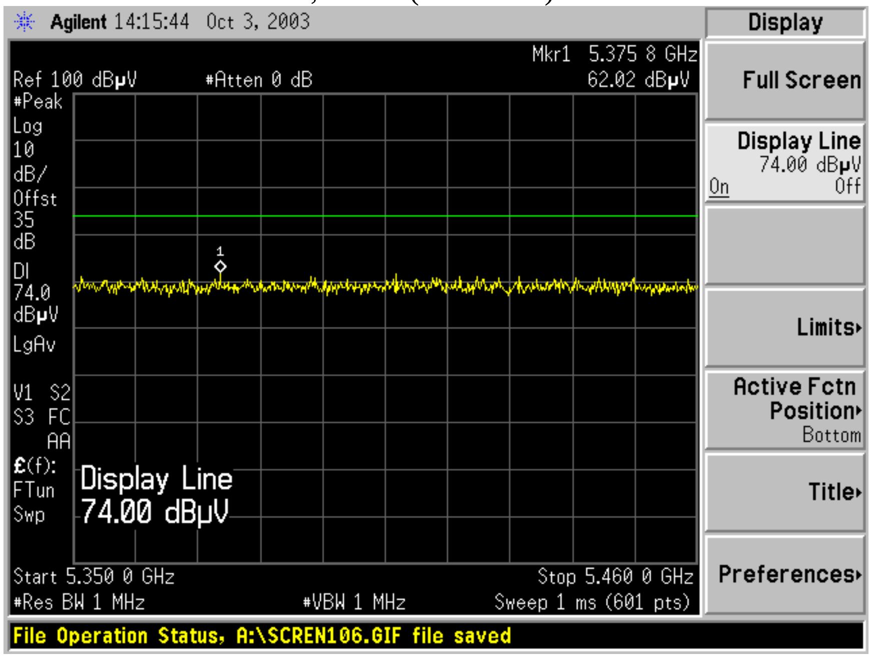


LOW CH RESTRICTED, AVG (Vertical)

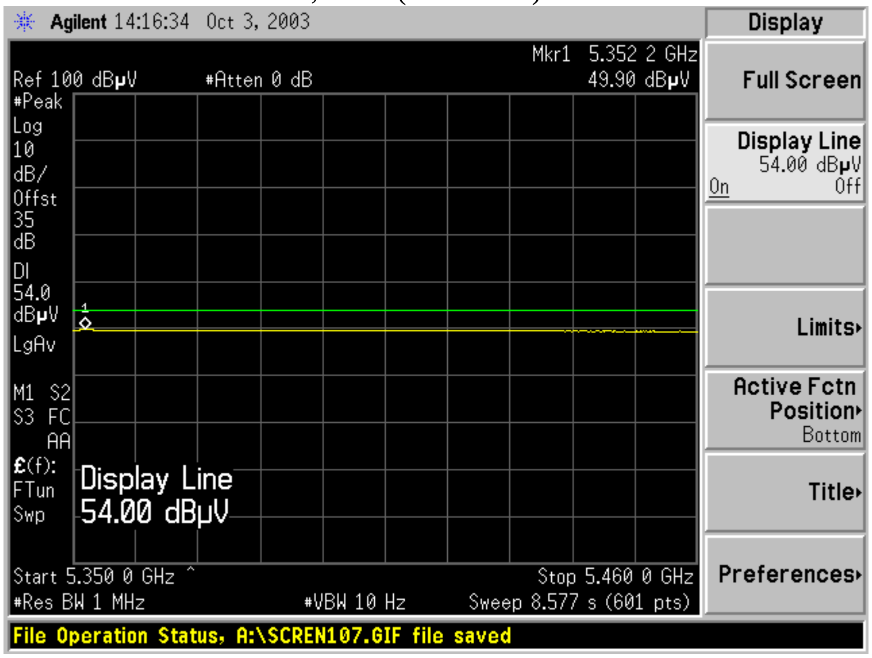


WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, PEAK (Horizontal)

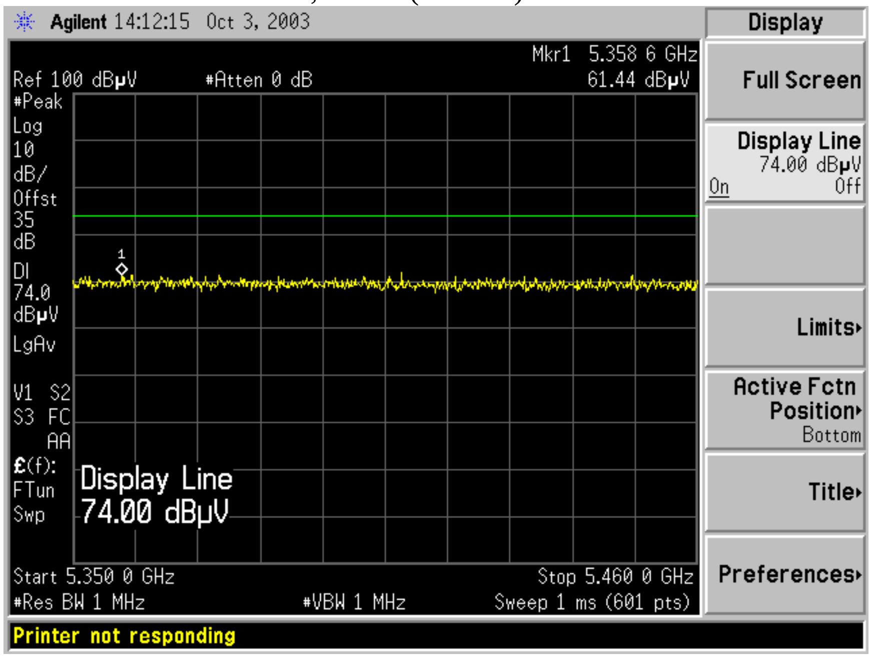


HIGH CH RESTRICTED, AVG (Horizontal)

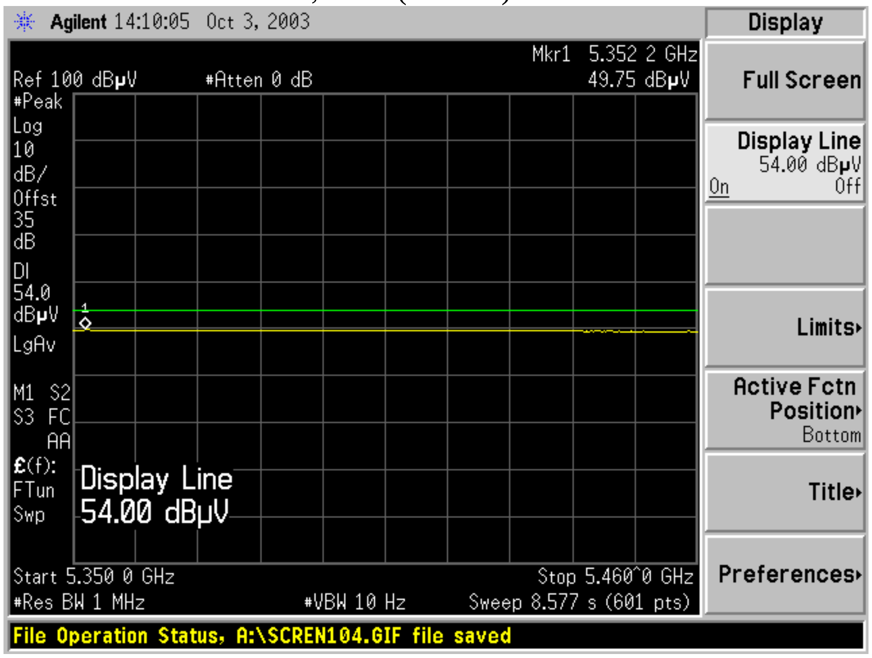


WORST-CASE RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, PEAK (Vertical)



HIGH CH RESTRICTED, AVG (Vertical)



WORST-CASE HARMONICS AND SPURIOUS EMISSIONS

10/03/03 **High Frequency Measurement**
Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Yan Zheng
Project #: 03U2197
Company: TOSHIBA AMERICA INFORMATION SYSTEM
EUT Descrip.: Intel 802.11 a/b Mini PCI Type B
EUT M/N: PA3234U-1MPC
Test Target: FCC CLASS B
Mode Oper: TX at worst-case co-located with bluetooth
Mini PCI Card at Channel 5320MHz; Bluetooth at Channel 2412MHz

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifier 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @1m	T86 Miteq 924341	Agilent E4446A Analyzer	T117; ARA 18-26GHz; S/N:1013	FCC 15.205

Hi Frequency Cables: ☐ (2 ft) ☑ (2 – 3 ft) ☐ (4 – 6 ft) ☑ (12 ft)

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
SPURIOUS & HARMONICS															
1.823	9.8	57.8	38.4	27.8	2.2	-44.1	0.0	1.0	44.6	25.2	74.0	54.0	-29.4	-28.8	H
10.640	9.8	50.3	37.3	38.8	7.1	-44.2	0.0	1.0	52.9	39.9	80.0	60.0	-27.1	-20.1	H
15.960	9.8	53.2	41.2	38.6	9.1	-48.4	0.0	1.0	53.5	41.5	80.0	60.0	-26.5	-18.5	H
1.823	9.8	58.8	45.3	27.8	2.2	-44.1	0.0	1.0	45.6	32.1	74.0	54.0	-28.4	-21.9	V
10.640	9.8	50.7	37.4	38.8	7.1	-44.2	0.0	1.0	53.3	40.0	80.0	60.0	-26.7	-20.0	V
15.960	9.8	47.6	41.2	38.6	9.1	-48.4	0.0	1.0	47.9	41.5	80.0	60.0	-32.1	-18.5	V
					NO RADIATED EMISSION FOUND ABOVE 16GHz										

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

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561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888

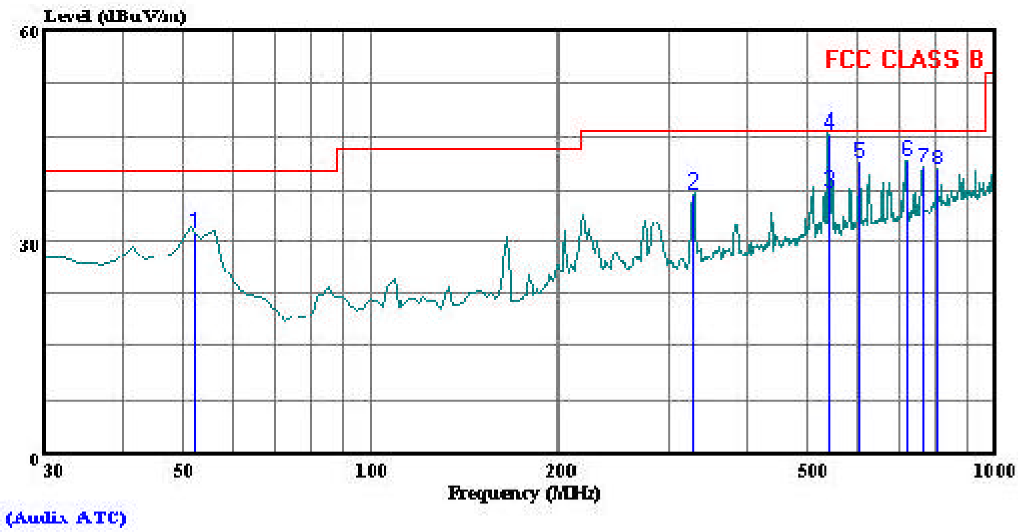
7.1.4. WORST-CASE RADIATED EMISSIONS BELOW 1 GHZ

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

COMPLIANCE Engineering Services, Inc.

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 6 File#: 30-1GHz.EMI Date: 09-27-2003 Time: 16:31:21



Trace: 3 Ref Trace:

Condition: FCC CLASS B 3m CHAMBER 030306 1185 VERTICAL
Tester : Thanh Nguyen
Project # : 03U2197
Company : Toshiba
EUT : 802.11a/b Mini PCI Type 3B card
Model No : PA3234U-1MPC (FCC ID: CJ6UPA3234WL)
Configuration : EUT
Target of Test : FCC CLASS B
Mode of Operation: TX,Worst Case
: VERTICAL

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB	
1	52.310	16.39	14.18	0.70	31.26	40.00	-8.74	Peak
2	328.760	22.23	12.82	1.83	36.87	46.00	-9.13	Peak
3	541.190	17.70	17.02	2.43	37.15	46.00	-8.85	QP
4	541.190	25.92	17.04	2.39	45.35	46.00	-0.65	Peak
5	606.180	21.08	17.75	2.53	41.36	46.00	-4.64	Peak
6	719.670	19.90	18.82	2.80	41.51	46.00	-4.49	Peak
7	764.290	18.24	19.38	2.92	40.54	46.00	-5.46	Peak

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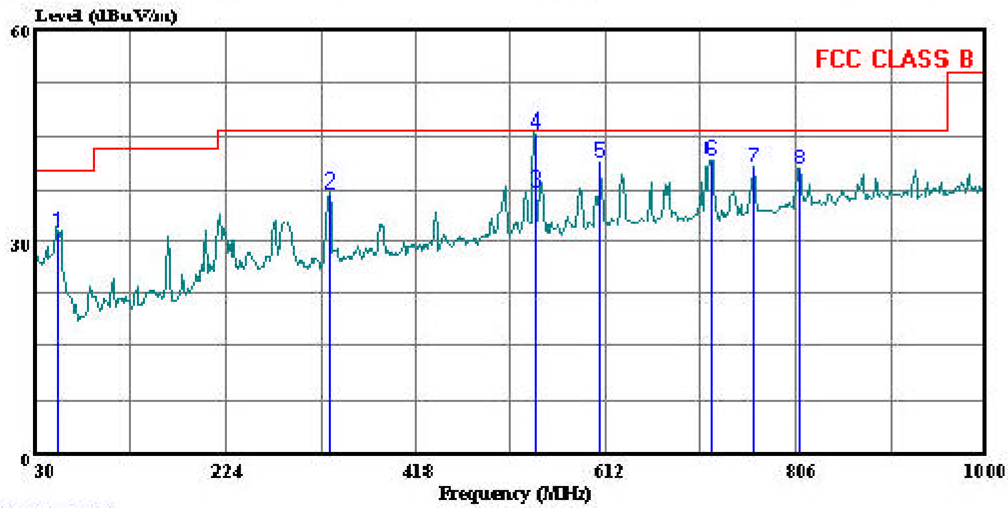
Data#: 2 File#: 30-1GHz.EMI Date: 09-27-2003 Time: 16:20:35
Page: 2

	Freq	Read Level	Probe Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB	
8	807.940	16.10	19.86	3.01	38.97	46.00	-7.03	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 6 File#: 30-1GHz.EMI Date: 09-27-2003 Time: 16:31:21



(Audix ATC)

Trace: 3 Ref Trace:

Condition: FCC CLASS B 3m CHAMBER 030306 1185 VERTICAL
Tester : Thanh Nguyen
Project # : 03U2197
Company : Toshiba
EUT : 802.11a/b Mini PCI Type 3B card
Model No : PA3234U-1MPC (FCC ID: CJ6UPA3234WL)
Configuration : EUT
Target of Test : FCC CLASS B
Mode of Operation: TX,Worst Case
: VERTICAL

Page: 1

	Freq	Read Level	Probe Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB	
1	52.310	16.39	14.18	0.70	31.26	40.00	-8.74	Peak
2	328.760	22.23	12.82	1.83	36.87	46.00	-9.13	Peak
3	541.190	17.70	17.02	2.43	37.15	46.00	-8.85	QP
4	541.190	25.92	17.04	2.39	45.35	46.00	-0.65	Peak
5	606.180	21.08	17.75	2.53	41.36	46.00	-4.64	Peak
6	719.670	19.90	18.82	2.80	41.51	46.00	-4.49	Peak
7	764.290	18.24	19.38	2.92	40.54	46.00	-5.46	Peak

Data#: 6 File#: 30-1GHz.EMI Date: 09-27-2003 Time: 16:31:21
Page: 2

	Freq	Read Level	Probe Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB	
8	808.910	17.38	19.87	3.01	40.26	46.00	-5.74	Peak

7.2. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit		Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.21	51.18	--	--	0.00	64.40	54.40	-13.22	-3.22	L1
0.96	31.10	--	--	0.00	56.00	46.00	-24.90	-14.90	L1
20.49	30.70	--	--	0.00	60.00	50.00	-29.30	-19.30	L1
0.21	48.93	--	--	0.00	64.43	54.43	-15.50	-5.50	L2
1.18	31.28	--	--	0.00	56.00	46.00	-24.72	-14.72	L2
9.86	31.22	--	--	0.00	60.00	50.00	-28.78	-18.78	L2
6 Worst Data									

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LINE 1 AND LINE 2 RESULTS

COMPLIANCE Engineering Services, Inc.

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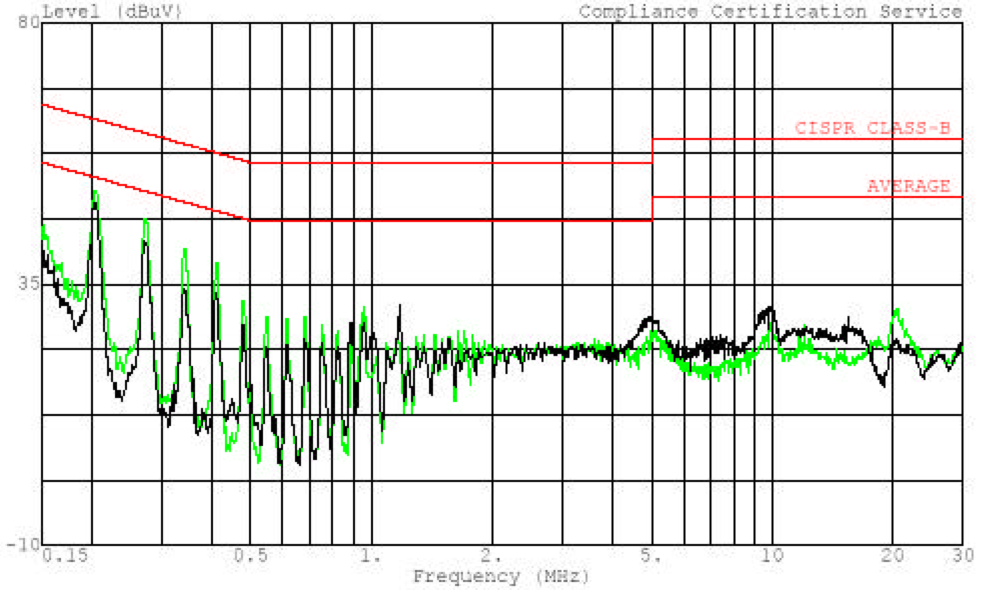
Data#: 7 File#: LC.EMI Date: 09-29-2003 Time: 19:08:59
Compliance Certification Service



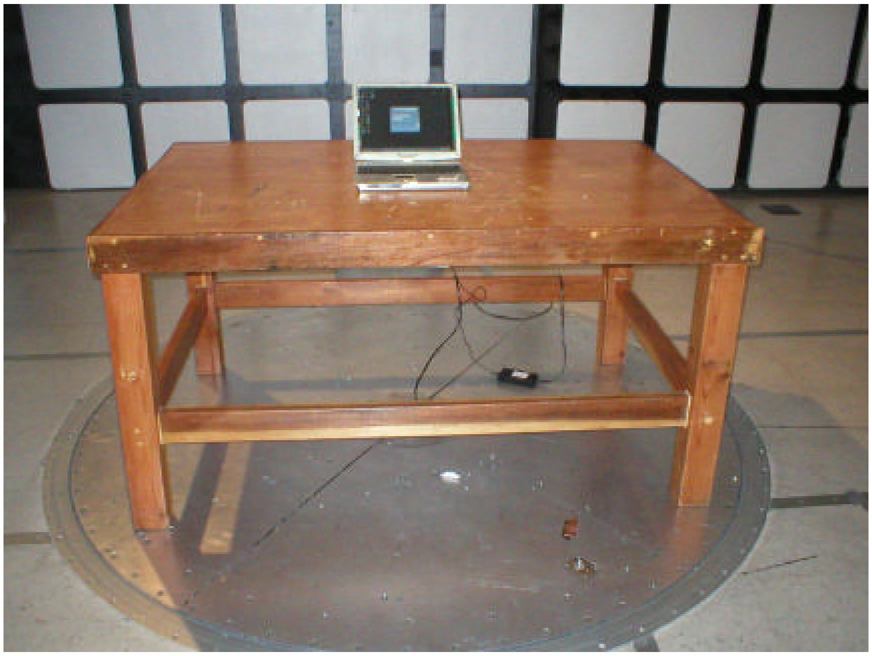
Trace: 3 Ref Trace:

Project # : 03u2197-1
Test Operator : THANH NGUYEN
Company : TOSHIBA
EUT : Intel 802.11a/b MiniPCI Type 3B Card
Model : PA3234U-1MPC (FCC ID: CJ6UPA3234WL
Configuration : EUT / POWER ADAPTER
Mode of Operation: TRANSMIT
: (Worst Case)
Target of Test : FCC CLASS B
Voltage : PK: L1(GREEN), L2(BLACK)
: 110 VAC / 60 Hz

8. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP

LAPTOP CONFIGURATION FRONT PHOTO



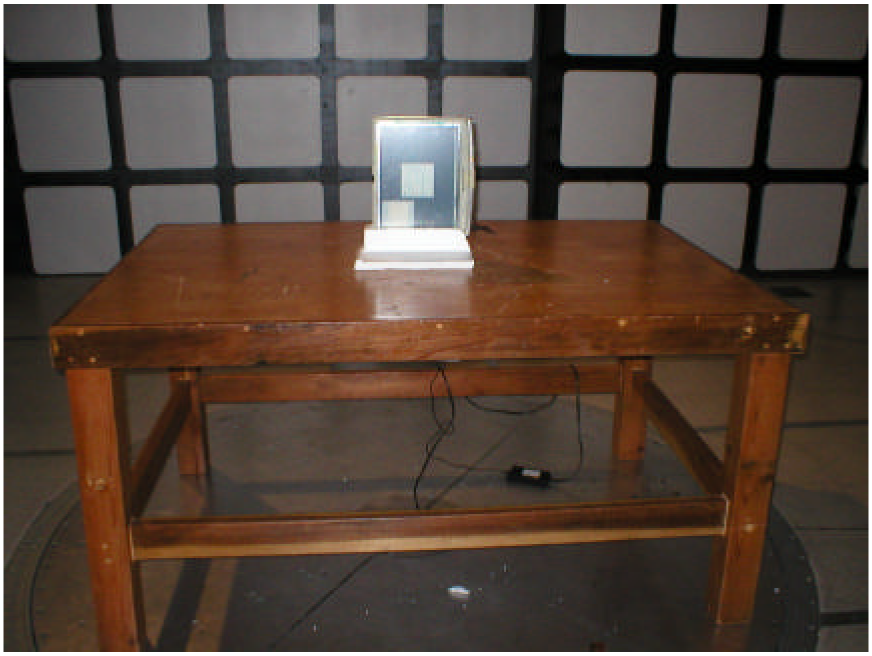
LAPTOP CONFIGURATION BACK PHOTO

TABLET CONFIGURATION X AXIS PHOTO

TABLET CONFIGURATION Y AXIS FRONT PHOTO

TABLET CONFIGURATION Y AXIS BACK PHOTO

TABLET CONFIGURATION Z AXIS FRONT PHOTO



TABLET CONFIGURATION Z AXIS BACK PHOTO

POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO

END OF REPORT